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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/553,026	07/13/2006	Richard C. Carlson	ELTP131WOUS	6793
29393	7590	12/24/2008	EXAMINER	
ESCHWEILER & ASSOCIATES, LLC NATIONAL CITY BANK BUILDING 629 EUCLID AVE., SUITE 1000 CLEVELAND, OH 44114			TRAN, BINH X	
			ART UNIT	PAPER NUMBER
			1792	
			NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

Docketing@eschweilerlaw.com

Office Action Summary	Application No. 10/553,026	Applicant(s) CARLSON ET AL.	
	Examiner Binh X. Tran	Art Unit 1792	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 October 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-29 is/are pending in the application.
- 4a) Of the above claim(s) 16-29 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>01/17/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claims 1-15, drawn to a process for electrode production. Class: 427/77.

Group II, claims 16-29, drawn to a metal article. Class 205.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: Groups I and II each include the common technical feature expressed in claims 1 and 16. However, the technical feature of claims 1 and 16 do not constitute a special technical feature because they are not a contribution over the prior art. US patent No. 4318795 and US 2002/148736, cited in International Search Report, dated 10/11/2005, show a process for electrode production and a coating composition described in claims 1 and 16.
3. During a telephone conversation with Ms. Michele Tyrpak, r. n. 42192, on 12/02/2008 a provisional election was made without traverse to prosecute the invention of Group I, claims 1-15. Affirmation of this election must be made by applicant in

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replying to this Office action. Claims 16-29 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 1-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 1, the mole percent of "ruthenium" is indefinite and lack antecedent basis. The applicants recite the coating consisting essentially of ruthenium oxide, titanium oxide, one or more thin oxide or antimony oxide (i.e. there is no ruthenium is the coating composition, only ruthenium oxide). For purpose of examination, the examiner will assume the mole percent of ruthenium is referring to "ruthenium oxide".

In claim 1, the mole percent of "titanium" is indefinite and lack antecedent basis. It is noted that the coating composition includes titanium oxide (there is no titanium in the coating solution). For purpose of examination, the examiner will assume the mole percent of titanium is referring to "titanium oxide".

In claim 1, “basis 100 mole percent of the metal content in the coating” is indefinite and lack antecedent basis. It is noted the coating contain metal oxide (not metal). For purpose of examination, the examiner will assume the basis 100 mole percent of “metal oxide” content.

In line 13 of claim 1, “minimal mudcracks” (emphasis added) is subjective, vague and indefinite. It is unclear from the claim what specific amount that applicants consider as “minimal mudcracks”.

In line 14 of claim 1, “said electrode” lacks antecedent basis. The examiner suggests replacing “said electrode” to --said electrolytic electrode-- in order to provide proper antecedent basis.

In line 3 of claim 5, “said titanium” is indefinite and lack proper antecedent basis for the same reason as discussed above in claim 1.

In lines 4-5 of claim 5 “basis 100 mole percent of the metal content of the coating” is indefinite and lack antecedent basis. It is noted the coating contain metal oxide (not metal). For purpose of examination, the examiner will assume the basis 100 mole percent of “metal oxide” content.

In claims 6-8, “basis 100 mole percent of the metal content of the coating” is indefinite and lack antecedent basis for the same reason as discussed above.

In claim 9, “the ratio of ruthenium metal to antimony or tin is from about 2:1 to about 0.1:1” (emphasis added) is indefinite and lack proper antecedent basis. It is noted that applicants teaches the coating comprises ruthenium oxide (not ruthenium metal), antimony oxide or tin oxide (not antimony or tin). For the purpose of

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examination the examiner will assume the ratio of ruthenium oxide to antimony oxide or tin oxide is from about 2:1 to about 0.1:1.

In claim 9, “the ratio of titanium metal to antimony or tin is from about 19:1 to about 1:1” (emphasis added) is indefinite and lack proper antecedent basis. It is noted that applicants teaches the coating comprises titanium oxide (not titanium metal), antimony oxide or tin oxide (not antimony or tin). For the purpose of examination the examiner will assume the ratio of titanium oxide to antimony oxide or tin oxide is from about 19:1 to about 1:1.

In claim 15, “basis 100 mole percent of the metal content of the coating” is indefinite and lack antecedent. It is noted the coating contain metal oxide (not metal). For purpose of examination, the examiner will assume the basis 100 mole percent of “metal oxide” content.

In claim 15, “the ratio of ruthenium metal to iridium is from about 1:1 to about 99:1” (emphasis added) is indefinite and lack proper antecedent basis. It is noted that applicants teaches the coating comprises ruthenium oxide (not ruthenium metal), and iridium oxide (not iridium). For the purpose of examination the examiner will assume the ratio of ruthenium oxide to iridium oxide is from about 1:1 to about 99:1.

Claims 10-11 directly or indirectly depend on claim 1. Claim 1 is related to a process for production of an electrolytic electrode. However, in claim 10-11, applicants further define the subject matter in terms of the result to be achieved without providing the technical features necessary for achieved this result. Claims 10-11 are indefinite

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because applicants fail to further disclose the specific step or condition to form an electrolytic electrode.

Claims 1-15 are indefinite because they directly or indirectly depend on indefinite claim 1.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1-6, 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Zolotarsky et al. (US 2002/0148736 A1).

Respect to claim 1, Zolotarsky discloses a process for the production of an electrolytic electrode having an electrocatalytic coating thereon, said process comprising the steps of:

providing a valve metal electrode base;

coating said valve metal electrode base with a coating layer of an electrochemically active coating on said valve metal electrode base, said coating consisting essentially of a mixture of ruthenium oxide, titanium oxide and one or more of tin oxides or antimony oxides, said mixture providing from at least about 10 mole percent up to about 30 mole percent ruthenium oxide, 0.1 to 10 mole percent of iridium

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oxide and 0.5 to 10 mole percent of antimony oxide and balance is titanium oxide (paragraph 0027).

and wherein said electrode produces about 1.5% oxygen in a chlorate electrolyte (Fig 3, paragraph 0048).

The mole percentage of titanium oxide can be calculated as show below:

Minimum mole percent of titanium oxide: $100\% - 30\% \text{ ruthenium oxide} - 10 \text{ mole percent of iridium oxide} - 10 \text{ mole percent of antimony oxide} = 50 \text{ mole percent of titanium oxide.}$

Maximum mole percent of titanium oxide: $100\% - 10\% \text{ ruthenium oxide} - 0.1 \text{ mole percent of iridium oxide} - 0.5 \text{ mole percent of antimony oxide} = 89.4 \text{ mole percent of titanium oxide.}$

Therefore, Zolotarsky teaches the composition includes 10-30 mol% of ruthenium oxide and 50-89.4 mol% of titanium oxide (read on applicant's range).

Zolotarsky does not explicitly disclose the surface morphology of said coating is characterized by minimum mudcracks. However, Zolotarsky teaches to form a coating using the same process, having the same composition and the same concentration with applicant's invention. Therefore, it is inherently that the surface morphology of the coating is characterized by minimum mudcracks.

Respect to claim 2, Zolotarsky discloses the valve metal electrode (i.e. conductive substrate) is titanium and said base is in sheet or tube form (paragraph 0020, 0030, 0038, Fig 1). Respect to claims 3-4, Zolotarsky teaches the surface of said valve metal

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electrode base is a prepared surface by using one or more of etching, grit blasting, intergranular etching, or thermal spraying (paragraph 0030-0031).

Respect to claim 5, Zolotarsky teaches the ruthenium oxide is present in the amount of 10-30 mole percent, including 20.8 mole percent in one example and titanium oxide is present in 50-89.4 mole %, including 73.1 mole percent (paragraph 0027, 0036; read on applicant's range). Respect to claim 6, Zolotarsky teaches the coating contains 0.5 to 10 mole percent of antimony oxide (paragraph 0027).

Respect to claim 9, Zolotarsky teaches it is possible to use 10 mole % of ruthenium oxide, 10 mole % of iridium oxide; and 10 mole% of antimony oxide; 70 mole percent of titanium oxide (i.e. balance is titanium oxide that is $100\% - 10\% - 10\% - 10\% = 70\%$; See paragraph 0027). Therefore, the ratio of ruthenium oxide to antimony equal $10:10 = 1:1$; and the ratio of titanium oxide to antimony oxide equal to $70:10 = 7:1$ (read on applicant's range).

Respect to claims 10-11, Zolotarsky does not explicitly disclose the specific surface morphology in the unit of platelets/mm². However, Zolotarsky teaches to form a coating using the same process having the same composition and the same concentration with applicant's invention. Therefore, it is inherently that the surface morphology value of the coating in Zolotarsky will be identical with applicant's invention when measure by scanning electron microscopy. Further it is well known that surface morphology can be measured using scanning electron microscopy (See prior art made of record).

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Respect to claim 12, Zolotarsky teaches to coating is a water-based coating (paragraph 0034). Respect to claim 13, Zolotarsky discloses the electrode is an anode in an electrolytic process for the production chlorate (paragraph 0024). Respect to claim 14, Zolotarsky discloses the process further comprises the step of heating the coating at a temperature of 450 °C for about 10-40 minute (paragraph 0034, read on applicant's range). Respect to claim 15, Zolotarsky discloses the iridium oxide is in the amount of 1.8 mole percent and the ratio of ruthenium oxide to iridium oxide equals $20.8:1.8 = 11.56:1$ (paragraph 0036, read on applicant's range).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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9. Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zolotarsky as applied to claims 1-6, 9-15 above, and further in view of De Nora (US 4,272,354).

Respect to claim 7-8, Zolotarsky fails to disclose the coating containing 2-20 mole percent tin oxide (claim 7); or 2-15 mole percent tin oxide (claim 8). De Nora teaches the amount of tin oxide (SnO_2) is a result effective variable varying from 1-20 wt% in order to control the potential (col. 3-4; See Table I, II). Any person having ordinary skill in the art would be able to convert from wt% to mole percent. It would have been obvious to one having ordinary skill in the art, at the time of invention, to perform routine experiments to obtain optimal amount of tin oxide because it helps to control the potentials.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Loeffelholz et al. (US 2003/0230167) disclose to use scan electron microscopy (aka SEM) to measure/observe platelet morphology (See paragraph 0137, 0142).

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Binh X. Tran whose telephone number is (571) 272-1469. The examiner can normally be reached on Monday-Thursday and every other Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on (571) 272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Binh X Tran
Primary Examiner
Art Unit 1792

/Binh X Tran/
Primary Examiner, Art Unit 1792